

BRAUERIA (Linz am See, Austria) 20: 7-9 (1993)

## VERTICAL DISTRIBUTION OF CADDIS LARVAE IN VARIOUS TYPES OF LAKE LITTORAL

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This contribution is supplementary to papers: Czachorowski 1989 and Czachorowski in prep. General model of habitat distribution of Trichoptera in lakes was presented during the 7th International Symposium on Trichoptera. Detailed data of this problem will be published shortly. Investigations are now being continued in the Lobelian lakes (The Pomerania Lakeland, North-West Poland).

Caddis larvae were collected during three years (1988-1990) at monthly intervals in three lakes: Narckie, Warchafdzkie and Brajnickie (Northern Poland). Vertical distribution of caddis larvae were investigated at seven stations (various types of littoral, see Bernatowicz & Zachwieja 1966).

Fig.1. Narckie Lake (mesotrophic), littoral with great-lake helophytes, elodeids distant from helophytes. Species typical for submergent plant (*Magnocaracetum*, *Ceratophyllum*, *Myriophyllum*) do not occur in helophytes (group C2: *Cyrnus flavidus*, *C. crenaticornis*, *Oxyethira* sp.) or occur in small numbers (group C1: *Leptocerus tineiformis*, *Mystacides longicornis*, *Athripsodes aterrimus*). Limnephilidae occur only in helophytes.

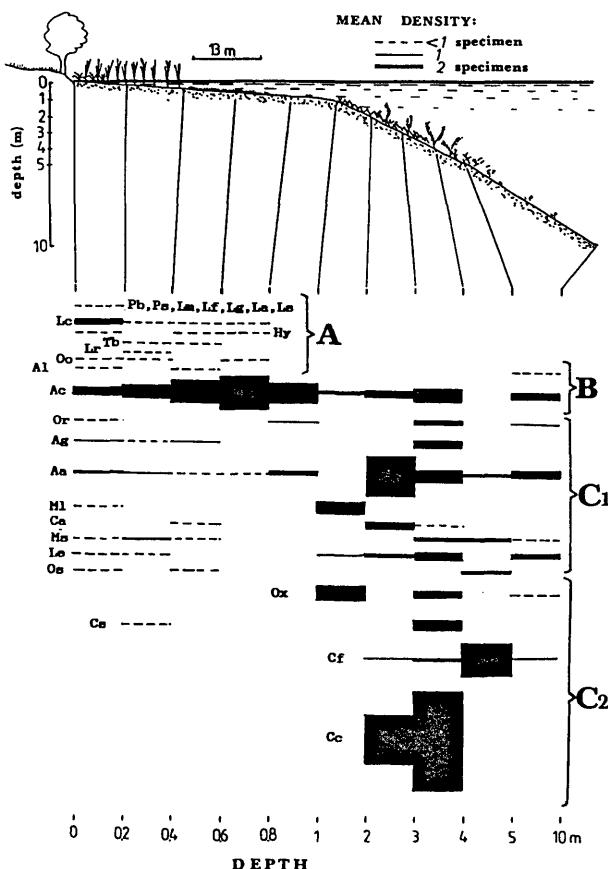


FIG. 1

## Abbreviations in the figures:

A (A1, A2) - species occurring only in the most shallow littoral (helophytes zone).

B (B1, B2) - species occurring throughout the vertical range.

C (C1, C2, C3) - species occurring only or mainly in elodeids zone.

Mean density: mean density of caddis larvae to 0,3 - 0,5 m<sup>2</sup> of bottom.

Fig.2. Narckie Lake, small-lake phytolittoral, elodeids directly adjoin helophytes. Special typical for large under-water meadows occur in helophyte zone in great numbers and species typical for helophytes (rushes and bulrush zone) in deep water.

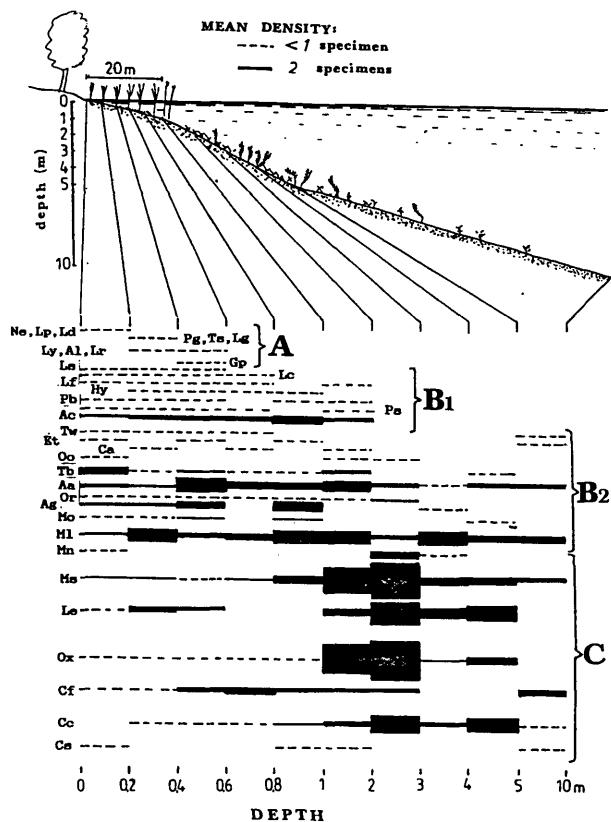


FIG. 2

Fig.3. Narckie Lake, atrophic phytolittoral, muddy bottom, elodeids represented mainly by *Stratiotes aloides*, *Characeae*, *Elodea canadensis*. *Limnephilus griseus* occur in temporary pools. Species of elodeids occur very near-by marsh helophytes.

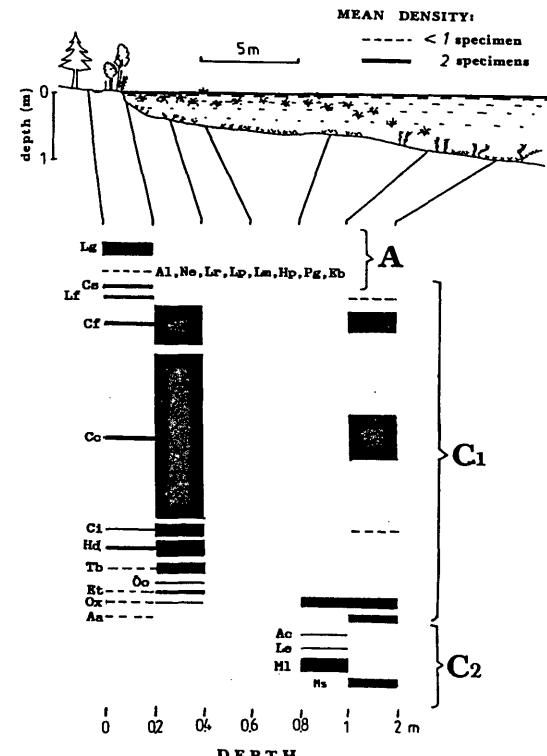


FIG. 3

Fig.4. Warchałdzkie Lake (eutrophic), small-lake phytolittoral.

Fig.5. Warchałdzkie Lake, pond phytolittoral.

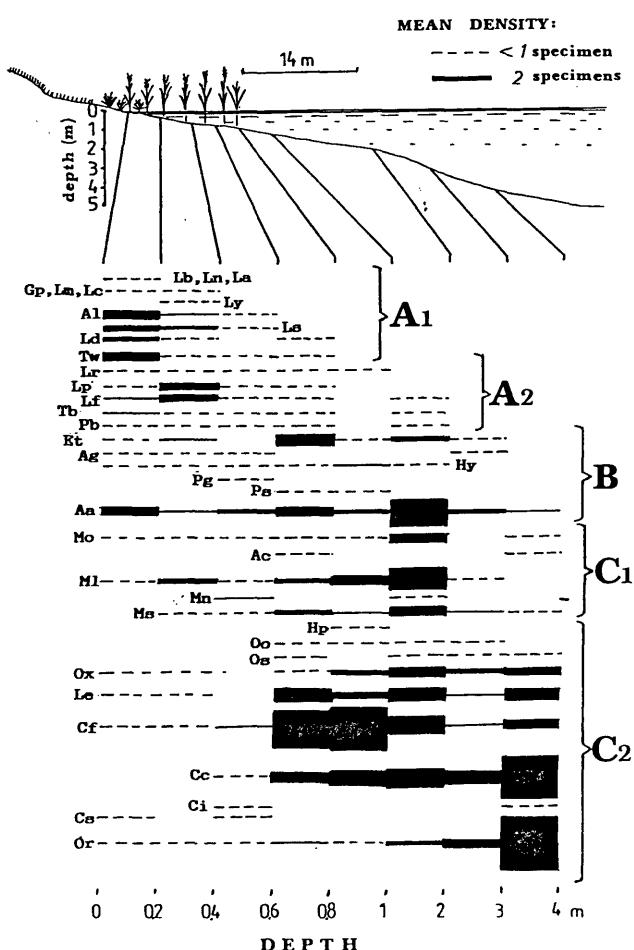


FIG. 4

Fig.6 and 7. Brajnickie Lake (hypertrophic), artificially changed phytolittoral. Submergent plants occur very deeply (depth 0,2 - 0,6 m) and represented mainly by *Potamogeton*. Species typical for perennial elodeids do not occur.

The presented data show that trophy of lake and type of habitat are of importance for vertical distribution of Trichoptera. However, spatial and vertical configuration of littoral and connected with them migrations of larvae between adjoining habitat modify this vertical distribution. The intensity of migrations is directly proportional to the distance between habitats.

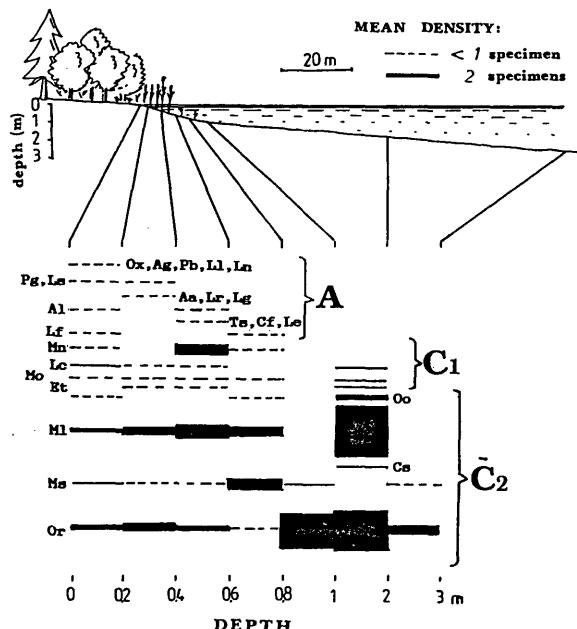


FIG. 6

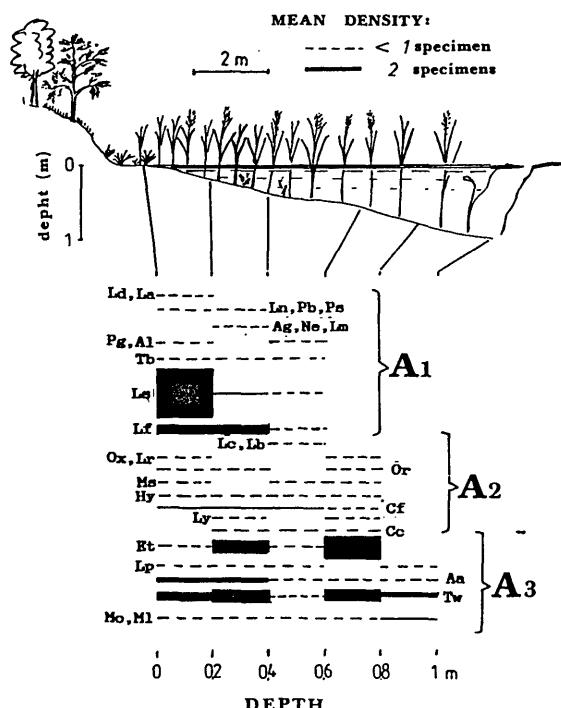


FIG. 5

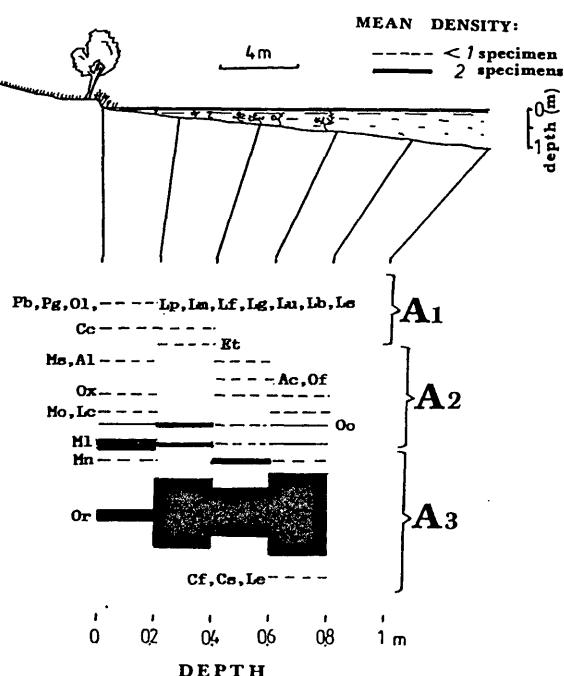


FIG. 7

Marks of species used in fig. 1 - 7:

Aa - Athripsodes aterrimus (Steph.), Ac - A.cinereus (Curt.), Ag - Agraylea multipunctata Curt., Al - Anabolia laevis (Zett.), Ca - Ceraclea annulicornis (Steph.), Cc - Cyrnus crenaticornis (Kol.), Cf - C.flavidus McL., Ci - C.insolitus McL., CS - C.sp.juv., Eb - Erotesis balitica McL., Et - Ecnomus tenellus (Ramb.), Hd - Holocentropus dubius (Ramb.), Hp - H.picicornis (Steph.), Hy - Hydroptila sp., La - Limnephilus auricula Curt., Lb - L.borealis (Zett.), Lc - L.fuscicornis Ramb., Ld - L.decipliens (Kol.), Le - Leptocerus tineiformis (Curt.), Lf - Limnephilus flavicornis (Fabr.), Lg - L.griseus (L.), Ll - L.lunatus Curt., Lm - L.marmoratus Curt., Ln - L.nigriceps (Zett.), Lp - L.politus McL., Lr - L.rombiculus (L.), Ls - L.sp.juv., Lu - L.sparsus (Curt.), Ly - Lype sp., MI - Mystacides longicornis (L.), Mn - M.nigra (L.), Mo - Molanna angustata Curt., Ms - Mystacides sp.juv., Ne - Nemotaulius punctatolineatus (Retz.), Of - Oecetis furva (Ramb.), OI - O.lacustris (Pict.), Oo - O.ochracea (Curt.), Or - Orthotrichia sp., Os - Oecetis sp.juv., Ox - Oxyethira sp., Pb - Phryganea bipunctata Retz., Pg - P.grandis L., Ps - P. sp.juv., Tb - Triaenodes bicolor (Curt.), Ts - Tinodes sp., Tw - T.waeneri (L.).

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Czachorowski,S., 1989, Vertical distribution of Trichoptera in three Masurian lakes - results of preliminary studies. - Pol.Arch.Hydrobiol. 36:351-358.

Czachorowski,S. (in prep.), Vertical distribution of caddis larvae in lakes. - Pol.Arch.Hydrobiol.

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#### MEETINGS

5th European Congress of Entomology, 28.8.-2.9.1994:  
Institute of Applied Biology, University of York, York YO1 5DD, U.K.

14. Internationales Symposium über Entomofaunistik in Mitteleuropa, München (BRD), 5.-10.9.1994  
Information: Dr.Gerhard SCHERER, Zoologische Staatssammlung, Münchhausenstraße 21, D - 8000 München 60, BRD.

8th International Symposium on Trichoptera Minneapolis/St.Paul, Minnesota, USA, 9 - 15 July 1995  
Information: Ralph Holzenthal, University of Minnesota, Department of Entomology. 219 Hodson Hall, 1980 Folwell Ave., St.Paul MN 55108-6125

20th International Congress of Entomology Florence, Italy, August 25 - 31, 1996  
Information: Organizing Secretariat, Via A.La Marmora 24, I - 50121 Firenze

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#### A.G.MCFARLANE: Obituary

A direct link with the 19th century was broken on 24 August 1992 when Alexander Grant McFarlane, who spent most of his life working on the systematics and life histories of the New Zealand Trichoptera, died after a short illness. Alex was born in Takapau, North Island of New Zealand on 9 December 1899. He graduated as a teacher from Wellington Training College in 1923; whilst teaching, he studied at Canterbury University part-time. His chosen thesis topic was the biology of the Rhyacophilidae.

Alex completed his M.A. degree in Zoology with First Class Honours at Canterbury University in 1937; he continued to work on Trichoptera part-time during his career as a school teacher. After retirement he came to Canterbury Museum, where he was appointed Technical Assistant in 1964 and Research Associate in 1965. He retired from the Museum in 1987. By this time he had named and described about (1/3) of the known New Zealand caddisfly fauna; he also studied and described the immature stages of many of the species. His 1951 paper on the larval Rhyacophilidae (now Hydrobiosidae) remains the standard work on the group.

Alex was a keen fisherman and lover of the outdoors all of his life. He is remembered with special affection by all who worked with him as a quiet, unassuming man, with a great interest in people.

#### A.G.McFarlane: Bibliography

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- & B.Cowie, 1981. Descriptions of new species and notes on some genera of New Zealand Trichoptera. - Rec.Canterbury Mus. 9:353-385.
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- & J.B.Ward, 1990. Triplectidina moselyi n.sp., a previously misidentified New Zealand caddis-fly (Trichoptera: Leptoceridae). - NZ Entomologist 13:55-59.

John B.Ward, Research Associate, Canterbury Museum.